

a non-single crystalline semiconductor layer on said gate insulating film, said semiconductor layer including a channel region located over said gate electrode; and source and drain regions with said channel region interposed therebetween, wherein said semiconductor device further comprises a thin film between said channel and said gate insulating film, said thin film comprising at least one selected from carbon, nitrogen, and oxygen.

35. A device according to claim 34, wherein said gate insulating film comprises silicon oxide.

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36. A device according to claim 34, wherein said non-single crystalline semiconductor film comprises one selected from the group consisting of amorphous silicon, polycrystalline silicon, and semi-crystalline silicon.

37. A device according to claim 34, wherein said non-single crystalline semiconductor film comprises one selected from the group consisting of silicon, germanium, GaAs.

38. A device according to claim 34, wherein said thin film has a thickness of 25-1000 Å.

39. A semiconductor device comprising:

a substrate having an insulating surface;

a gate electrode on said insulating surface;

a gate insulating film over said gate electrode and said insulating surface;

and

a non-single crystalline semiconductor layer on said gate insulating film, said semiconductor layer including a channel region located over said gate electrode and source and drain regions with said channel region interposed therebetween,

wherein said semiconductor device further comprises a thin film between said channel region and said gate insulating film, said thin film comprising at least one selected from carbon, nitrogen, and oxygen.

40. A device according to claim 39, wherein said gate insulating film comprises silicon oxide.

Q 41. A device according to claim 39, wherein said non-single crystalline semiconductor film comprises one selected from the group consisting of amorphous silicon, polycrystalline silicon, and semi-crystalline silicon.

42. A device according to claim 39, wherein said non-single crystalline semiconductor film comprises one selected from the group consisting of silicon, germanium, GaAs.

43. A device according to claim 39, wherein said thin film has a thickness of 25-1000 Å.

44. A semiconductor device comprising:
a substrate having an insulating surface;
a gate electrode on said insulating surface;
a gate insulating film over said gate electrode and said insulating surface;
a non-single crystalline semiconductor layer on said gate insulating film, said semiconductor layer including a channel region located over said gate electrode; and

source and drain regions with said channel region interposed therebetween, wherein said semiconductor device further comprises a thin film between said channel and said gate insulating film, said thin film added at least one selected from carbon, nitrogen, and oxygen.

45. A device according to claim 44, wherein said gate insulating film comprises silicon oxide.

46. A device according to claim 44, wherein said non-single crystalline semiconductor film comprises one selected from the group consisting of amorphous silicon, polycrystalline silicon, and semi-crystalline silicon.

47. A device according to claim 44, wherein said non-single crystalline semiconductor film comprises one selected from the group consisting of silicon, germanium, GaAs.

48. A device according to claim 44, wherein said thin film has a thickness of 25-1000 Å.

49. A semiconductor device comprising:
a substrate having an insulating surface;
a gate electrode on said insulating surface;
a gate insulating film over said gate electrode and said insulating surface;
and
a non-single crystalline semiconductor layer on said gate insulating film, said semiconductor layer including a channel region located over said gate electrode and source and drain regions with said channel region interposed therebetween,

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wherein said semiconductor device further comprises a thin film between said channel and said gate insulating film, said thin film added at least one selected from carbon, nitrogen, and oxygen.

50. A device according to claim 49, wherein said gate insulating film comprises silicon oxide.

51. A device according to claim 49, wherein said non-single crystalline semiconductor film comprises one selected from the group consisting of amorphous silicon, polycrystalline silicon, and semi-crystalline silicon.

52. A device according to claim 49, wherein said non-single crystalline semiconductor film comprises one selected from the group consisting of silicon, germanium, GaAs.

53. A device according to claim 49, wherein said thin film has a thickness of 25-1000 Å.

54. A semiconductor device comprising:
a substrate having an insulating surface;
a gate electrode on said insulating surface;
a gate insulating film over said gate electrode and said insulating surface;
and
a non-single crystalline semiconductor layer on said gate insulating film, said semiconductor layer including a channel region located over said gate electrode; and source and drain regions with said channel region interposed therebetween,

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wherein said semiconductor device further comprises a thin film under said source and drain regions, said thin film comprising at least one selected from carbon, nitrogen, and oxygen.

55. A device according to claim 54, wherein said thin film is located between said gate insulating film and said semiconductor film.

56. A device according to claim 54, wherein said gate insulating film comprises silicon oxide.

57. A device according to claim 54, wherein said non-single crystalline semiconductor film comprises one selected from the group consisting of amorphous silicon, polycrystalline silicon, and semi-crystalline silicon.

58. A device according to claim 54, wherein said non-single crystalline semiconductor film comprises one selected from the group consisting of silicon, germanium, GaAs.

59. A device according to claim 54, wherein said thin film has a thickness of 25-1000 Å.

60. A semiconductor device comprising:

a substrate having an insulating surface;

a gate electrode on said insulating surface;

a gate insulating film over said gate electrode and said insulating surface;

and

a non-single crystalline semiconductor layer on said gate insulating film, said semiconductor layer including a channel region located over said gate electrode and source and drain regions with said channel region interposed therebetween,

wherein said semiconductor device further comprises a thin film under said source and drain regions, said thin film comprising at least one selected from carbon, nitrogen, and oxygen.

61. A device according to claim 60, wherein said thin film is located between said gate insulating film and said semiconductor film.

62. A device according to claim 60, wherein said gate insulating film comprises silicon oxide.

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63. A device according to claim 60, wherein said non-single crystalline semiconductor film comprises one selected from the group consisting of amorphous silicon, polycrystalline silicon, and semi-crystalline silicon.

64. A device according to claim 60, wherein said non-single crystalline semiconductor film comprises one selected from the group consisting of silicon, germanium, GaAs.

65. A device according to claim 60, wherein said thin film has a thickness of 25-1000 Å.

66. A semiconductor device comprising:
a substrate having an insulating surface;
a gate electrode on said insulating surface;

a gate insulating film over said gate electrode and said insulating surface;
a non-single crystalline semiconductor layer on said gate insulating film,
said semiconductor layer including a channel region located over said gate electrode; and
source and drain regions with said channel region interposed therebetween,
wherein said semiconductor device further comprises a thin film under said
source and drain regions, said thin film added at least one selected from carbon, nitrogen,
and oxygen.

67. A device according to claim 66, wherein said thin film is located between said
gate insulating film and said semiconductor film.

68. A device according to claim 66, wherein said gate insulating film comprises
silicon oxide.

69. A device according to claim 66, wherein said non-single crystalline
semiconductor film comprises one selected from the group consisting of amorphous
silicon, polycrystalline silicon, and semi-crystalline silicon.

70. A device according to claim 66, wherein said non-single crystalline
semiconductor film comprises one selected from the group consisting of silicon,
germanium, GaAs.

71. A device according to claim 66, wherein said thin film has a thickness of 25-
1000 Å.

72. A semiconductor device comprising:

- a substrate having an insulating surface;
- a gate electrode on said insulating surface;
- a gate insulating film over said gate electrode and said insulating surface;

and

a non-single crystalline semiconductor layer on said gate insulating film, said semiconductor layer including a channel region located over said gate electrode and source and drain regions with said channel region interposed therebetween,

wherein said semiconductor device further comprises a thin film under said source and drain regions, said thin film added at least one selected from carbon, nitrogen, and oxygen.

73. A device according to claim 72, wherein said thin film is located between said gate insulating film and said semiconductor film.

74. A device according to claim 72, wherein said gate insulating film comprises silicon oxide.

75. A device according to claim 72, wherein said non-single crystalline semiconductor film comprises one selected from the group consisting of amorphous silicon, polycrystalline silicon, and semi-crystalline silicon.

76. A device according to claim 72, wherein said non-single crystalline semiconductor film comprises one selected from the group consisting of silicon, germanium, GaAs.